Naddod N9500-128QC Datasheet

AI Data Center 128*400G Switch

NADDOD Pte.Ltd.

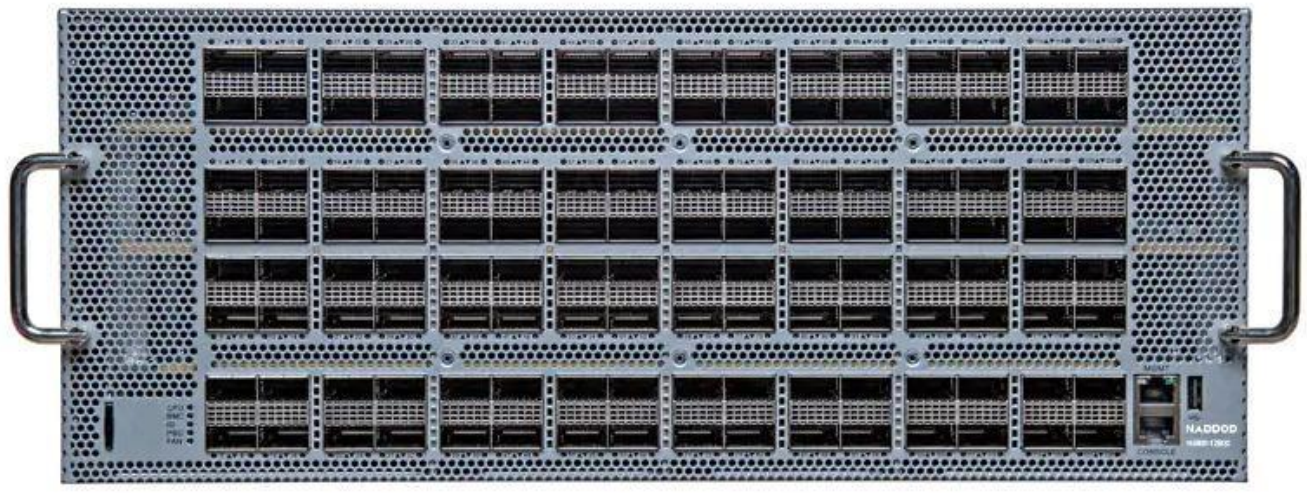
1. Product Overview

The N9500-128QC is a next-generation, high-performance, and high-density fixed switch launched by Naddod for high-end data centers and AI-generated content (AIGC) intelligent computing scenarios.

The N9500-128QC features an advanced hardware architecture design, offering 128 x 400GE ports with support for line rate forwarding. Additionally, it is equipped with redundant pluggable power supplies and fans. The switch seamlessly integrates into the Naddod AI Fabric solution, incorporating Dynamic Load Balancing (DLB) technologies to enhance bandwidth for AIGC intelligent computing networks and accelerate AI training. In a typical 2-tier networking scenario, it supports up to 8,000 x 400GE ports, while in a typical 3-tier network scenario, it supports up to 32,000 x 400GE ports. Furthermore, the switch supports quick RoCE configuration and allows the import of complex settings such as priority-based flow control (PFC) and explicit congestion notification (ECN) on RDMA networks with a single click, facilitating fast deployment.

2. Product Pictures

N9500-128QC



Front View

Rear View

Isometric View

3. Product Features

Building Next-Generation Data Center Networks

The rapid development of AI and machine learning (ML), big data, high-performance computing, distributed storage, and other applications is driving the evolution of next-generation data center networks to 400GE/800GE networks. To satisfy the demand for higher performance and greater bandwidth within confined spaces, the N9500-128QC provides up to 128 x 400GE ports in a 4 RU rack space, meeting the evolution requirements of next-generation data center networks.

Building High-Performance and Low-Delay Data Center Networks

The N9500-128QC works to build an end-to-end, lossless, and low-latency Remote Direct Memory Access (RDMA) bearer network, leveraging advanced flow control technologies such as PFC and ECN, as well as memory management unit (MMU) tuning. Moreover, it seamlessly integrates into the Naddod AI Fabric solution, incorporating DLB technology to mitigate the equal-cost multi-path (ECMP) problems inherent in traditional flow-based load balancing. This improves the bandwidth for AI computing scenarios and accelerate AI training. Additionally, the switch meets the network deployment requirements of AI and ML, high-performance computing, distributed storage, big data, and other application scenarios.

Carrier-Class Reliability Protection

The N9500-128QC supports 2+2 power redundancy and 7+1 fan redundancy, guaranteeing hot-swappable functionality for all power and fan modules without disrupting the switch's normal operation. Additionally, it features fault detection and alarm capabilities for power supplies and fans, and automatically adjusts fan speed according to ambient temperature changes within the data center. The switch provides device-level reliability protection, including overcurrent, overvoltage, and overheat protection.

The switch also integrates various link-level reliability mechanisms, such as dual-homed access, graceful restart (GR), and bidirectional forwarding detection (BFD). When multiple services and heavy traffic are carried over the network, these mechanisms can reduce the impact of exceptions on network services and enhance the overall reliability.

Quick Deployment

The Zero-Touch Provisioning (ZTP) automates the process of installing or upgrading software images, and installing configuration files on Naddod N9500-128QC switches.

Intelligent O&M

The N9500-128QC features automatic parameter adjustment through real-time RoCE telemetry, visibility of end-side status and RoCE services, and congestion and packet loss analysis.

IPv4/IPv6 Dual-Stack Protocols and Multilayer Switching

The N9500-128QC supports IPv4/IPv6 dual stack and implements multilayer line rate switching. It

distinguishes between IPv4 and IPv6 packets and integrates multiple tunneling technologies such as manual tunneling. You can flexibly work out communication solutions by using this switch based on IPv6 network planning and network conditions.

The N9500-128QC switch accommodates a wide variety of IPv4 routing protocols, including static routing, Routing Information Protocol (RIP), RIPv2, Open Shortest Path First (OSPF), and Border Gateway Protocol version 4 (BGP4).

In addition, it supports an extensive array of IPv6 routing protocols, including static routing, Routing Information Protocol next generation (RIPng), OSPFv3, and BGP4+. You can flexibly select an IPv6 routing protocol to upgrade the live network to an IPv6 network or establish a new IPv6 network.

All-Round Management Performance

The N9500-128QC provides various management ports, including the console port, management port, and USB port. It supports Simple Network Management Protocol (SNMP) v1/v2c/v3 and integrates with the universal network management platform. It facilitates device management through CLI-based management, Telnet, and cluster management. The supported encryption modes such as SSH2.0 and SSL ensure secure management.

Additionally, the switch supports Switched Port Analyzer (SPAN), Remote Switched Port Analyzer (RSPAN), and multiple SPAN monitoring ports, providing clear visibility into network service traffic. It can generate various traffic analysis reports, enabling users to optimize network structure and adjust resource deployment promptly.

4. Product Specifications

Hardware Specifications

System Specifications	N9500-128QC
Ports	128 × 400GE ports (QSFP112), up to 256 x 200GE ports
CPU	Intel Ice lake-D 1734NT(8Core)/1713NTE(4Core)
Expansion Module Slots	Not supported
Expansion Modules	Four power module slots Eight fan module slots
Management Port	One management port, one console port, and one USB port, compliant

	with the USB2.0 standard
Switching Capacity	51.2 Tbps
Packet Forwarding Rate	21,000 Mpps
Dimensions and Weight	**N9500-128QC**
Dimensions (W × D × H)	440 mm x 800 mm x 175 mm (4 RU)
Weight	≤45 kg (including eight fan modules and four power modules)
Power Supply and Consumption	**N9500-128QC**
Maximum Power Consumption	3,600 W
Environment and Reliability	**N9500-128QC**
Operating Temperature	0ºC to 40ºC (32ºF to 104ºF)
Operating Humidity	10% RH to 90% RH (Non-condensing)

Software Specifications

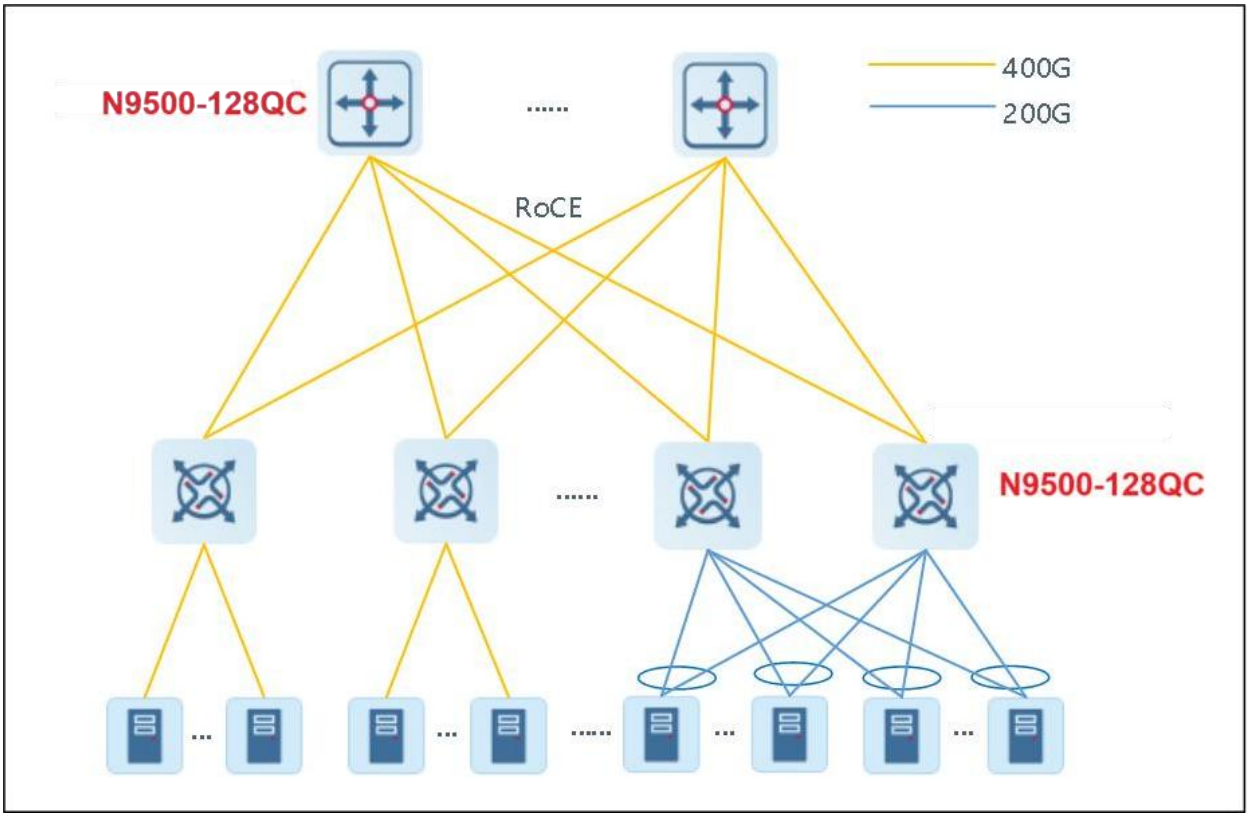
Software Specifications	**N9500-128QC**
Layer 2 Protocols	IEEE 802.3ae (10GBase), IEEE 802.3ak, IEEE 802.3an, IEEE 802.3x, IEEE 802.3ad (Link Aggregation Control Protocol), IEEE 802.1p, IEEE 802.1Q, IEEE 802.1D (STP), IEEE 802.1w (RSTP), IEEE 802.1s (MSTP), jumbo frame (9 KB)
Layer 3 Protocols (IPv4)	BGP4, OSPFv2, RIPv1, RIPv2, LPM routing, PBR, routing policy, ECMP, WCMP, VRRP, VRF, SAG, VRF, ISIS, ISIS6
IPv6 Protocols	Neighbor discovery, ICMPv6, path MTU discovery, DNSv6, DHCPv6, ICMPv6, ICMPv6 redirection, ACLv6, TCP/UDP for IPv6, SNMP v6,

Software Specifications	N9500-128QC
	Ping/Traceroute v6, IPv6 RADIUS, Telnet/SSH v6, FTP/TFTP v6, NTP v6, IPv6 MIB support for SNMP, VRRP for IPv6, IPv6 QoS
IPv6 Features	Static routing, ECMP, PBR, OSPFv3, RIPng, BGP4+
Data Center Features	PFC, PFC-WD ECN * VXLAN, BGP-EVPN
Visualization	Telemetry sFlow
QoS	802.1p, DSCP, and ToS mapping ACL-based traffic classification Priority marking/remarking Multiple queue scheduling mechanisms, including SP, WRR, WFQ, DRR, SP+WRR, SP+WFQ, and SP+DRR Congestion avoidance mechanisms such as WRED and tail discarding
High Availability Design	GR for RIP/OSPF/BGP, BFD
Security Features	RADIUS/TACACS, ACL, RIPv2, AAA, CACL, COPP
Management Mode	SNMP v1/v2c/v3, Telnet, console, MGMT, RMON, SSHv1/v2, FTP/TFTP, NTP, Syslog, SPAN/ERSPAN, ZTP, NETCONF, Python, Restful API
Other Protocols	DHCP client, DHCP relay, DHCP server, DNS client, proxy ARP, and syslog

* indicates that the feature will be available in the future.

5. Typical Applications

AIGC Network Scenario



6. Configuration Guide

Take the following steps to order an N9500-128QC switch:

- Select the chassis.
- Select optical transceivers based on port requirements.

7. Ordering Information

Chassis, Fan Modules, and Power Modules

Product Model	Description
N9500-128QC	128 × 400GE QSFP112 ports, four power module slots, and eight fan module slots

400GBASE Series Optical Transceivers

Model	Description
Q112-400G-SR4	400GBASE-SR4 QSFP112 850nm 100m MTP/MPO-12 APC MMF
Q112-400G-VR4	400GBASE-VR4 QSFP112 850nm 50m MTP/MPO-12 APC MMF
Q112-400G-DR4	400GBASE-DR4 QSFP112 1310nm 500m MTP/MPO-12 APC SMF
Q112-400G-FR4	400GBASE-FR4 QSFP112 1310nm 2km Duplex LC SMF
Q112-400G-CU	400G QSFP112 Passive Direct Attach Copper Twinax Cable

200GBASE Series Optical Transceivers

Model	Description
Q56-200G-SR4	200GBASE-SR4 QSFP56 850nm 100m MPO/MTP-12 UPC MMF
Q56-200G-FR4	200GBASE-FR4 QSFP56 1310nm 2km Duplex LC SMF
Q56-200G-CU	200G QSFP56 Passive Direct Attach Copper Twinax Cable
Q56-200G-A	200GbE QSFP56 Active Optical Cable

100GBASE Series Optical Transceivers

Model	Description
QSFP-100G-SR4	100GBASE-SR4 QSFP28 850nm 70m (OM3) /100m (OM4) MPO/MTP-12 MMF
QSFP-100G-PSM4	100GBASE-PSM4 QSFP28 1310nm 2km MPO/MTP-12 SMF
QSFP-100G-LR4	100GBASE-LR4 QSFP28 1310nm 10km Duplex LC SMF
QSFP-100G-ER4	100GBASE-ER4 QSFP28 1310nm 40km Duplex LC SMF

8. Warranty

For more information about warranty terms and period, contact your local sales agency:

- Warranty terms: https://www.naddod.com/support/
- Warranty period: https://www.naddod.com/support/

Note: The warranty terms are subject to the terms of different countries and distributors.

9. More Information

For more information about Naddod, visit the official Naddod website or contact us:

- Naddod official website: https://www.Naddod.com/
- Online support: https://www.Naddod.com/support
- Email support: support@Naddod.com